F·A·A·M facility for airborne atmospheric measurements

# FLIGHT FOLDER

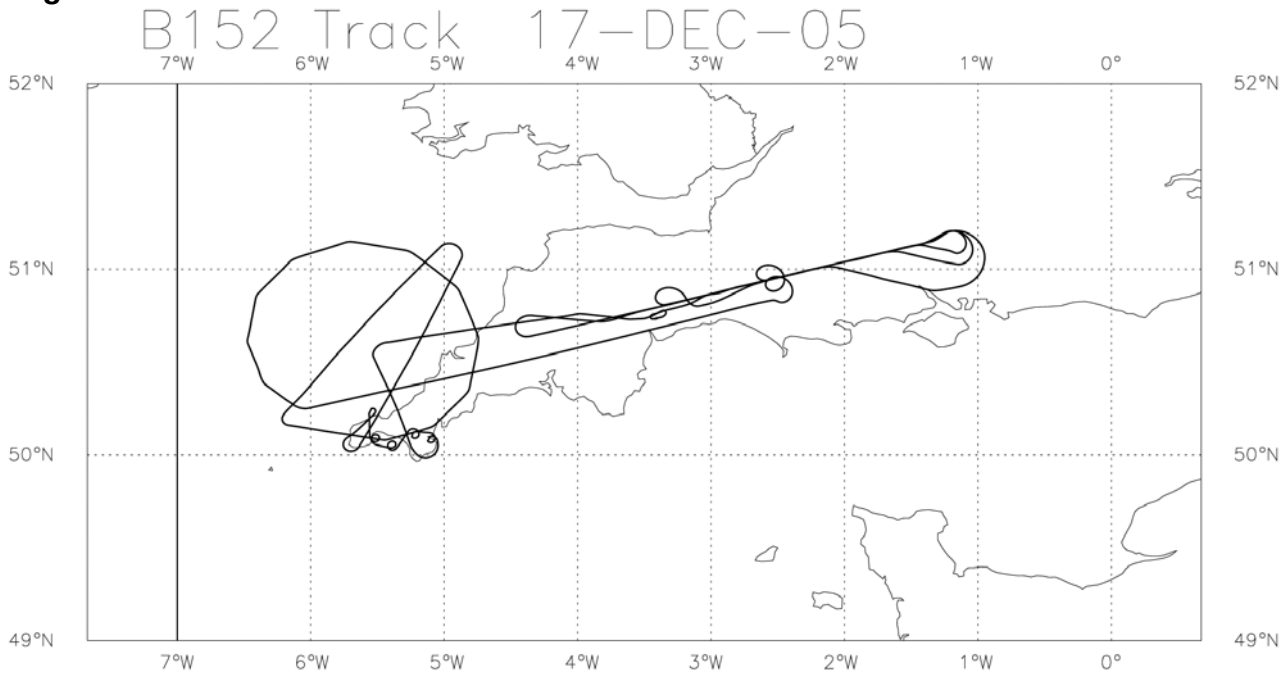

| | |
|---|---|
| Flight No.: | B152 |
| Date: | 17 Dec 2005 |
| Take Off | 11:06:15 |
| Landing: | 15:39:54 |
| Flight Time | 4h33m39s |

**Campaign:** CAESAR / CIRRUS / SWS

**Operating Area:** Chilbolton 253 radial

| POB | Position | Name | Institute |
|---|---|---|---|
| 1 | Captain | Alan Foster | Directflight |
| 2 | Co-pilot | Steve Ball | FAAM |
| 3 | CCM | Sue Angold | Directflight |
| 4 | Mission Scientist | Jonathan Taylor | Met Office |
| 5 | Flight Manger | Jim Crawford | FAAM |
| 6 | Cloud physics | Martyn Pickering | Met Office |
| 7 | Dropsondes | Steve Devereau | FAAM |
| 8 | MARSS/DEIMOS | Dave Pollard | Met Office |
| 9 | Dropsondes u/t | Paul James | FAAM |
| 10 | SWS | Ian Rule | Met Office |
| 11 | ARIES | Joss Kent | Met Office |
| 12 | CPI | Hazel Jones | Manchester University |
| 13 | TAFTS | Paul Green | ICL |
| 14 | TAFTS | Maxwell Bolton | ICL |
| 15 | | | |
| 16 | | | |
| 17 | | | |
| 18 | | | |
| 19 | | | |

**Flight Track:**

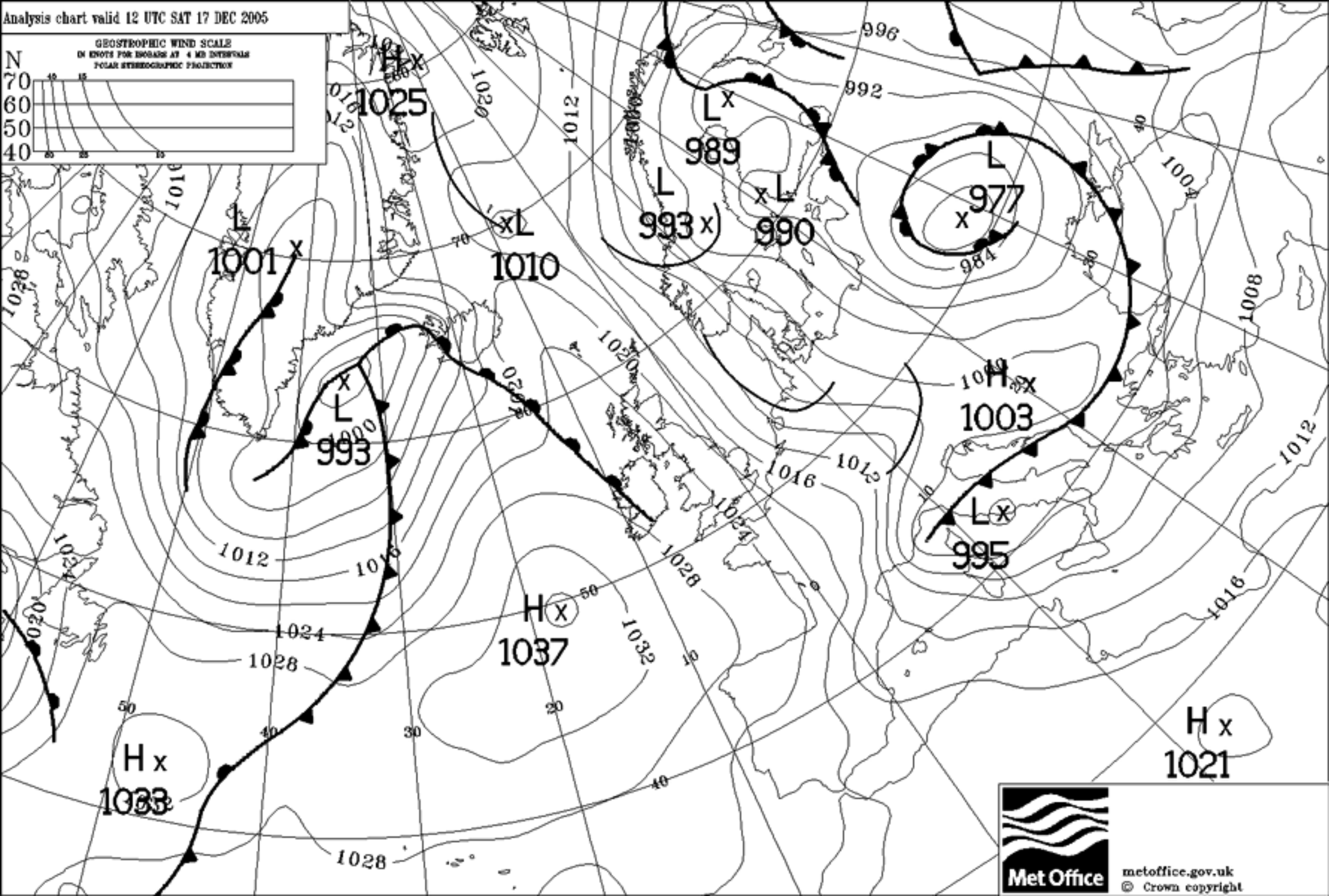


FLIGHT SUMMARY

Flight No B152
Date: 17 dec 2005
Project: SWS test
Location: SW approaches

| Start Time | End Time | Event | Height (s) | Hdg | Comments |
|---|---|---|---|---|---|
| 102436 | | INU | -.20 kft | 256 | to NAV |
| 105406 | | start | -.20 kft | 256 | 50'43.95N 003'24.81W gps |
| 110615 | | T/O | 1.2 kft | 066 | Exeter |
| 110757 | | asp | 1.5 kft | 062 | open |
| 111220 | 120615 | Profile 1 | 1.7 - 32.0 kft | 078 | |
| 111341 | | video | 3.0 kft | 061 | #1 dfc, #2 rfc |
| 112652 | | interrupt P1 | 18.0 kft | 057 | |
| 112733 | | overhead Chilbolton | 18.0 kft | 043 | |
| 113442 | | overhead Chilbolton | 18.0 kft | 272 | westbound |
| 113735 | | restart P1 | 18.0 kft | 272 | |
| 114950 | | interrupt P1 | 28.0 kft | 267 | fl280 |
| 115012 | | video | 28.0 kft | 267 | recycle titler |
| 115515 | | restart P1 | 28.0 kft | 050 | |
| 120421 | | contrail starts | 31.6 kft | 060 | |
| 120555 | | overhead Chilbolton | 32.1 kft | 039 | |
| 121231 | 123628 | Run 1.1 | 32.0 kft | 274 | fl320 |
| 121408 | | abeam Chilbolton | 32.0 kft | 294 | |
| 121430 | | bbr | 32.0 kft | 298 | retracted |
| 121752 | | video | 32.0 kft | 298 | #2end,#4started rfc |
| 122014 | | turn onto radial | 32.0 kft | 296 | |
| 122230 | | wings level | 32.0 kft | 267 | |
| 123736 | | heimann | 32.0 kft | 344 | cal |
| 123801 | | Nev | 32.0 kft | 018 | zero |
| 124051 | 124209 | Run 1.2 | 32.0 kft | 088 | |
| 124155 | | video | 32.0 kft | 079 | #1end,#3started dfc |
| 124225 | 125824 | Run 1.3 | 32.0 kft | 063 | |
| 125534 | | sonde 1 | 32.0 kft | 060 | |
| 125824 | | overhead Chilbolton | 32.0 kft | 047 | |
| 130744 | 131332 | Run 1.4 | 32.0 kft | 268 | positioning for orbit |
| 131345 | | | 32.1 kft | 281 | reboot fm pc |
| 132223 | | ! | 32.0 kft | 266 | end chilbolton work |
| 131400 | 131718 | orbit 1 | 32.0 kft | 265 | 30' fl 320 |
| 131722 | 132044 | orbit 2 | 32.0 kft | 265 | 30' fl 320 |
| 132646 | | video | 32.1 kft | 265 | #4 end #6 start |
| 132717 | | ! | 32.0 kft | 265 | #6 is rfc |
| 134551 | | transit | 32.0 kft | 262 | to orbit location |
| 134827 | 135012 | Run 2.1 | 32.0 kft | 307 | dodecagon |
| 135056 | 135259 | Run 2.2 | 32.0 kft | 338 | 345 |
| 135347 | 135559 | Run 2.3 | 32.0 kft | 005 | 015 |
| 135633 | 135835 | Run 2.4 | 32.0 kft | 033 | 045 |
| 134700 | | video | 32.0 kft | 033 | #3 end ,#5 start dfc |
| 135925 | 140124 | Run 2.5 | 32.0 kft | 063 | 075 |
| 140205 | 140412 | Run 2.6 | 32.0 kft | 093 | 105 |
| 140453 | 140653 | Run 2.7 | 32.0 kft | 127 | 135 |
| 140734 | 140935 | Run 2.8 | 32.0 kft | 160 | 165 |
| 141024 | 141224 | Run 2.9 | 32.0 kft | 196 | 195 |
| 141307 | 141506 | Run 2.10 | 32.1 - 32.0 kft | 228 | 225 |
| 141552 | 141752 | Run 2.11 | 32.1 - 32.0 kft | 258 | 255 |
| 141834 | 142037 | Run 2.12 | 32.0 kft | 283 | 285 |
| 142154 | | contrails | 31.3 kft | 284 | engine test stopped |
| 142537 | 142542 | Run 3 | 26.1 - 26.0 kft | 034 | |
| 142837 | | video | 26.0 kft | 030 | #6 end #8start rfc |
| 142900 | 143902 | Run 3.1 | 26.0 kft | 029 | fl 260 |
| 143924 | | Heiman cal | 26.0 kft | 042 | |
| 143945 | | nev | 26.0 kft | 077 | zeros |
| 144258 | 145300 | Run 3.2 | 26.0 kft | 212 | fl 260 |
| 145106 | | video | 26.0 kft | 214 | #5 end #7 start dfc |
| 145722 | 145759 | Orbit 1 | 26.0 - 26.1 kft | 348 | 60' |
| 145858 | 150039 | Orbit 4 | 26.1 kft | 182 | 150 established |
| 150141 | 150307 | Orbit 5 | 26.1 - 25.9 kft | 087 | established 065 |

| | | | | |
|---|---|---|---|---|
| 150435 | 150606 | Orbit 6 | 26.1 - 26.0 kft | 030 established 060 |
| 150656 | 150828 | Orbit 7 | 26.1 - 26.0 kft | 101 establish 120 |
| 151537 | | ! | 26.0 kft | 336 end science |
| 153954 | | Land | -.22 kft | 094 Exeter |
| 154510 | | gps | -.22 kft | 242 50'43.93N 003' 24.81W |
| 154613 | | inu | -.22 kft | 242 50'44.43N 003' 28.41W |


Analysis chart valid 12 UTC SAT 17 DEC 2005
GEOSTROPHIC WIND SCALE
IN KNOTS FOR ISOBARS AT 4 MB INTERVALS
POLAR STEREOGRAPHIC PROJECTION
N
70
60
50
40
H 1025
L 1001
L 993
L 1010
L 989
L 993
L 990
L 977
H 1003
L 995
H 1037
H 1033
H 1021
1028
1024
1020
1016
1012
1008
1004
996
992
984
1032
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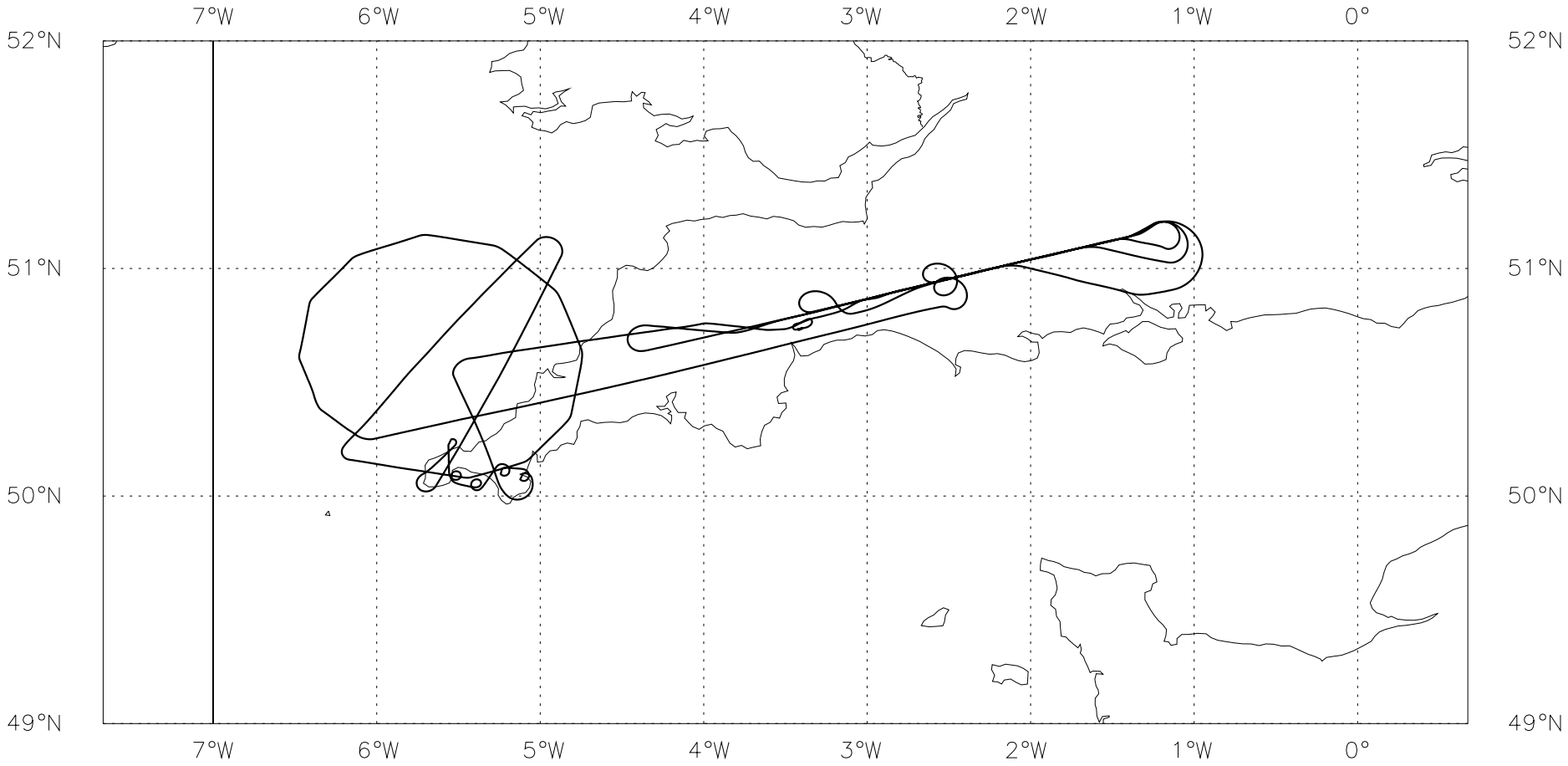
# B152 Track 17-DEC-05



**CAESAR SORTIE BRIEF**

**Cirrus in-situ measurements for radar validation**

**B152 17th December 2005**

**Aim**

The aim is to study the in-situ properties of cirrus over land, co-ordinated with the Chilbolton radars/lidars

**Weather**

Cirrus, ideally with clear skies below. Some cloud below is acceptable, as long as the cirrus is measurable by the radar.

**Operating region**

Runs and profiles are expected to take place along a fixed radial from the Chilbolton Meteorological Observatory (51 08' 36" N 01 26' 02" W) at the location of the cirrus, ideally into and with the wind direction. Note, the 35GHz radar and lidar have a fixed vertical view and hence measurements directly over the site are critical. Only the 3GHz is steerable during CAESAR 1.

**Clearances**

Clearances will be required for dropping sondes and performing a profile from minimum allowable altitude.

**Communications**

With operators at Chilbolton via SATCOM or VHF radio (130.575 MHz, call-sign "Radsearch").

**Sortie for Cranfield takeoff**

| | | Manoeuvre | Duration (min) | Total time (min) |
|---|---|---|---|---|
| 1 | 12:00 | Takeoff from Exeter | | 0 |
| 2 | 12:00 | Transit at appropriate level to enter operating area at min altitude | 10 | 10 |
| 3 | 12:10 | Profile ascent from minimum altitude to cloud top at 1000ft/min or to max altitude | 40 | 75 |
| 6 | 12:50 | 1 straight and level run above cloud. Drop 1 sonde. | 10 | 170 |
| 7 | **12:58** | **Satellite overpass** during run. | | |
| 8 | 13:00 | Reciprocal straight and level run. | 10 | 180 |
| 9 | 13:15 | Perform a series of reciprocal straight and level runs at several levels within, below and above the cloud, into and with the wind direction ideally along a Chilbolton radial, with profile descents between each level. Orbits may be flown at the end of runs below the cirrus cloud if airspace restrictions permit. | 80 | 260 |
| 10 | 16:30 | Profile descent to min altitude at 1000ft/min | 30 | 290 |
| 11 | 17:00 | Transit to Exeter | 10 | 330 |

**Requirements for ARIES and SWS**

**In the cloud:**

ARIES: nadir with cals every 2 minutes ideally during turns
SWS: series of approximately 0, 180, 90 and 45 degree viewing angles during every run with appropriate cals (measurements to be used to test Robin Hogan's 3D stochastic model) - see extra guidance sheet.

**Above cloud:**

***1st run above cloud***
ARIES & SWS both viewing nadir. Calibrations to be coordinated such that both instruments simultaneously view the cloud for the maximum time.
***2nd run above cloud***
ARIES & SWS both viewing nadir **then** for last 2 minutes both viewing zenith .

**Mission Scientist's Debrief**

**Flight B152 17th December 2005.**

**Jonathan P Taylor.**

The aim of this flight was to study thin cirrus overhead Chilbolton radar and then to conduct some SWS tests in the SW approaches.

On take off from Exeter a stepped profile was flown along the 253deg radial towards Chilbolton. The profile was interrupted at FL180 to go overhead Chilbolton and then resumed on a SW heading. The profile was interrupted again at FL280 near Exeter and resumed on a heading towards Chilbolton. The observatory was overflown at FL320. The aircraft began contrailing at FL315. Overhead Chilbolton there was no cloud at low level and all the cirrus was above FL320. At no time during the sortie were we able to penetrate the cirrus clouds. From the radar it could be seen that aircraft passing overhead were 5000ft higher and still contrailing, it was also evident that there was cirrus above these higher aircraft.

To the SW end of the runs there was extensive boundary layer cloud but this remained clear of Chilbolton for the entire sortie.

A series of three runs at FL320 were flown passing the overhead of Chilbolton with the final run culminating with an AIRS overpass at 12:58 and ARIES, SWS and TAFTS all looking up through the cirrus cloud as the 146 passed directly over Chilbolton a dropsonde was launched over the New Forest on the final run in before the overpass. After the over pass we re-positioned to the SW of Chilbolton to give sufficient airspace to conduct some orbits. A series of orbits with 30 degree angle of bank were then flown.

This concluded the cirrus part of the sortie and the 146 then transited to the SW approaches to find some clear skies to conduct some SWS tests.

Having found a suitable operating area in the SW Approaches a Dodecagon (12 sided pattern with 30degree turns between each run) was flown at FL320 with the SWS looking upwards. The skies were clear above for this series of 12 runs.

The aircraft then descended to FL260 for a couple of runs down and in to sun. There may have been some thin Ci during some of these runs. After these runs five orbits were flown with 50 degrees of bank. This concluded the SWS tests.

**Summary**

The cirrus overhead Chilbolton was extensive but optically very thin and all above the aircraft. A good overpass of AIRS was coordinated with a run above Chilbolton with SWS, ARIES and TAFTS making zenith views.

The SWS tests should prove useful in understanding the internal reflection problems with the SWS.

# Aircraft Scientist's Log

J. TAYLOR

Flight No **B**.152..... Date ...17/12/05..... Page ..1.... of .....19

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| GMT | Run / Profile | Height | Hdg | GPS Position | Remarks (clouds, weather, visibility, winds, sea state etc.) |
|---|---|---|---|---|---|
| 110703 | | | | | T/OFF |
| 111220 | P1 | 20000ft | | | Stg P1 along 253° ahead towards Chilbolton SC over Exeter but looks good on but thin Ci ahead |
| | | | | | clear below thin Ci above. |
| 111700 | | | | | |
| 112046 | | FL110 | | | thin Ci overhead some acpt containing clear skies below |
| | | | | | |
| 112652 | P1 | FL180 | | 51.1/1.6 | Interrupt P1 & goaround Chilbolton South to SW4 |
| 112730 | | FL180 | | | Overhead Chilbolton thin Ci above clear skies below. |
| | | | | | |
| 113440 | | FL180 | | | Overhead Chilbolton thin Ci above. |
| 113735 | P1 | FL180↑ | 272 | 51/1.8W | Restart P1 TWR does not work at the moment. |
| | | | | | |
| 114357 | | FL234 | | | TWR is now working |
| 114730 | | | | over | Stg layer cloud now some more structure visible. |
| | | | | | |
| | P1 | FL280 | | | Interrupt Angle turn back towards Chilbolton. |
| | | | | | |
| 115515 | P1 | FL280↑ | 058 | 50.8/2.9 | Restart P1 back towards Chilbolton. |
| 115816 | | FL285 | | | T = -43°C Td = -43.4°C. |
| 120200 | | FL310 | | | T = -50°C. GE = -47.7 FWVS = -44°C. |
| | | | | | |
| 120638 | | FL315 | | | Started to contract. 96.9 75.9 90.0 5.4 |
| | | | | | |

50°50'N
1°40'W.

# Aircraft Scientist's Log

Flight No **B**..152..... Date ..17/12/03..... Page ..2.. of ..9

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| GMT | Run / Profile | Height | Hdg | GPS Position | Remarks (clouds, weather, visibility, winds, sea state etc.) |
|---|---|---|---|---|---|
| 120615 | P1 | FL320 | | | End of P1 overhead Chilbolton |
| | | | | | Still containing. 120615. 120955 |
| | | | | | No imagery on 2DC or CPI just |
| | | | | | below Ci base. |
| 121231 | R1.1 | FL320 | 295 | 50.8/1.2 | Stg Run back to SW. Not worked |
| | | | | | Chilbolton turn was power limited |
| | | | | | so we ended up way to South. |
| 121365 | | | 299 | | Aircraft above ~ 5000ft containing |
| | | | | | Tops of Ci at least above FL370. |
| | | | | | No chance of us getting above it |
| | | | | | Still no imagery on 2DC or CPI |
| | | | | | Still containing. |
| 122025 | | | | | Change of heading to recapture 253° |
| | | | | | radial back to SW. |
| | | | | | Extensive Ci above clear below |
| | | | | | at Chilbolton b'dary lengthened to SW |
| | | | | | end of run. |
| 122157 | | FL320 | 266 | | Wings level. Extended run to SW |
| 123036 | | | | | Over SC now. to ensure we heard Chilbolton aircraft run at A1/A5 abeam time. |
| 123628 | R1.1 | FL320 | 266 | 50.6/4.3 | End Run 1.1 |
| 126051 | R1.2 | FL320 | 087 | 50.9/3.9 | Stg Run 1.2 |
| | R1.2 | FL320 | | | Midpoint R1.2 |
| 126225 | R1.3 | FL320 | 063 | 50.9/3.7 | Start R1.3 now on heading for worked Chilbolton |
| | | | | | |
| | | | | | |

225° 3Hrs

# Aircraft Scientist's Log

Flight No B.152 Date 19/12/07 Page 3 of 39



| GMT | Run / Profile | Height | Hdg | GPS Position | Remarks (clouds, weather, visibility, winds, sea state etc.) |
|---|---|---|---|---|---|
| 124619 | | FL320 | | | Still contacting 91.0 N1 726 TGT 88.4 N2 4.9 FF/Fa. |
| 125035 | | | | | clear y cloud below now 8/8 Ci overhead |
| 125533 | R1.3 | FL320. | 060 | 51/1.8 | Dropsonde launch. 1. SLOS, ARIES + TAFFS looking up for ARIES overpass. |
| 125822 | | | | | Overhead Chilbolton |
| 125824 | R1.3 | FL320 | | | End y R1.3 |
| 130744 | R1.4 | FL320 | 268 | | Stg R1.6 reporting down heads to SW y Chilbolton to raid clear airspace probat. |
| 131332 | R1.6 | FL320. | | | End R1.6 |
| 131345. | 01 | FL320 | | 50.9/2.6 | Stg 01 30° bank Thin Ci overhead. — Nodes change Still contacting but not persisting. than it did per ARIES overpass. |
| 131718. | 07 | FL320 | | | End y 01 |
| 131722 | 02 | FL320 | | | Stg 02 30° bnd appears to be turning rapidly |
| 132044. | 02 | FL320 | | | End y 02 |
| DAVE P takes NOW PRIMARY MISSION SCIENTIST. | | | | | Dodecagon runs in SW approaches clear skies above - Sc below. |
| | | | | | We are contacting at FL320 |
| | | | | | acpt at FL300 is not contacting acpt - at FL350 is contacting = non persistent |

Possibly some very thin Ci overhead during slow run at FL260

# Aircraft Scientist's Log

pdlmrd

Flight No B.152..... Date .....17/12/5..... Page ..1.... of ..6...



| GMT | Run / Profile | Height | Hdg | GPS Position | Remarks (clouds, weather, visibility, winds, sea state etc.) |
|---|---|---|---|---|---|
| 11:06 | | | | | Take off |
| | | | | | into ~ 2/8 Cu/Sc |
| | | | | | @ various levels |
| 11:12:20 | P1 | 2000 | 79 | | Still below. Gaps |
| | | 3000 | | | starting to come Cov'd w/ some |
| | | | | | holes. Under more Layered cloud. |
| 11:15:00 | | | | | Cloud thinning as we progress |
| | | | | | W'wards |
| 11:15:45 | | | | | Now very clear passed edge |
| | | | | | @ ~ 5.7 kft |
| | | | | | Some thin Ci above |
| 11:17:20 | | | | | Passed over some lenticular cloud |
| 11:19 | | | | | V. clear below, some scat. Cu tops off |
| | | | | | heavy |
| | P1 | 180 | 57 | 57.1 01.5 W | Interrupt |
| 11:27:30 | | | | | Overhead Chilbolton |
| 11:34:45 | | | | | " " |
| 11:39:30 | | | 287 | | Seem to have vacated profile |
| 11:45 | | | | | as thickening up overhead at this |
| ~~11:46~~ | | | | | end. |
| 11:46 | | | | | Extensive Sc/Sc below and to |
| | | | | | west now. |
| | P1 | 280 | 267 | | Interrupt. |
| | | | | | Some thin Ci adds to W. over |
| | | | | | 8/8 Sc, not much above. |

# Aircraft Scientist's Log

pollard

Flight No B...152..... Date ...17/12/5..... Page ...2... of ...6...



| GMT | Run / Profile | Height | Hdg | GPS Position | Remarks (clouds, weather, visibility, winds, sea state etc.) |
|---|---|---|---|---|---|
| 11:53 | | | | | Edge of Sc below. |
| 11:55:50 | P1 | 280 | 50 | 50.8N 2.8W | Re start of of profile |
| 12:02 | | 315 | 60 | | Just starting to contrail |
| | | | | | Ci above appearing slightly thicker |
| 12:03:45 | | | | | overhead clipbdton |
| RH | | | | | |
| 12:06: | P1 | 320 | | 51.1N 1.3 W | end of profile |
| 12:08 | | | | | Contrails getting stronger |
| 12:09 | | | | | Ci here seems a bit thicker |
| 12:12 | R1.1 | 320 | 275 | 50.9N 1.1W | Ci way above |
| | | | | | Still contrailing |
| | | | | | Ci base appears to be at least 5 kft |
| | | | | | below |
| 12:20:15 | | | | | Turning back onto radial |
| 12:22'09 | | 266 | 266 | | Wings level. |
| 12:28:45 | | | | | Coming over cloud edge for |
| | | | | | Sc. |
| | | | | | Extending run to be over clipbdton |
| | | | | | for 12:58 sat overpass. |
| 12:36:28 | R1.1 | 320 | | 50.63 N 4.41 W | Still contrailing |
| 12:37 | | | | | Low cloud more broken to N |
| 12:40:57 | R1.2 | 320 | 87 | | |
| 12:42:09 | R1.2 | | | | End |
| 12:42:25 | R1.3 | 320 | 62 | 50.77 -3.69 | Start of run. |
| | | | | | Still contrailing |

Proved

# Aircraft Scientist's Log

Flight No **B**...152..... Date .....17/12/5..... Page ..3.. of ..6....

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| GMT | Run / Profile | Height | Hdg | GPS Position | Remarks (clouds, weather, visibility, winds, sea state etc.) |
|---|---|---|---|---|---|
| 12:47 | | 320 | 62 | 50·86 N 3·06 W | Still controlling, |
| | | | | | still Ci above |
| | | | | | ~ 1/8 Sc below (just crossed |
| | | | | | main edge) |
| 12:55:36 | | | | | Sonde # 1 |
| 12:58:23 | R1·3 | 320 | | | Over Chilbolton, end of run |
| | | | | | & Aqua overpass. |
| 13:07:44 | R1·4 | 320 | 268 | 51.08 ~ 1·8 W | Start run to pos^n for orbits. |
| | | | | | Still Ci above, clear below |
| | | | | | still controlling. |
| 13:13: | R1·4 | 320 | | | First |
| 13:13 | 01 | 280→ | 250) | | Start of 30° orbit to right |
| | | | | | Still controlling |
| 13:17 | 01 | | 258 | | end orbit 1 |
| 13:17.23 | 02 | ~~330~~ | 300 | | start orbit 2 |
| | | | | | Contrails still being produced |
| | | | | | but not persisting v. long |
| 13:20:43 | 02 | | | | end of orbit |
| 13:24:46 | | 50·74 N 3·1 W | | | Crossing lower cloud edge |
| 13:32 | | | | | Still controlling, not persistent |
| | | | | | slightly weaker than before |
| 13:48:~~47~~ | 2·1 | | 315 | | start of Dodecahedron |
| | 2·2 | | 336 | | |
| 13:52:59 | 2·2 | 320 | | | End |
| 13:53:47 | 2·3 | | 004 | | Start |

# Aircraft Scientist's Log

Flight No **B**...153..... Date .....17/12/15..... Page ...4. of ...6...

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| GMT | Run / Profile | Height | Hdg | GPS Position | Remarks (clouds, weather, visibility, winds, sea state etc.) |
|---|---|---|---|---|---|
| 13:52:44 | | | | | A/c at + 1900 ft contrail on |
| | | | | | " ob - 1900 ft not |
| | | | | | We are trailing |
| 13:55: | 2·3 | | | | End not persistent |
| 13:56: | 2·4 | 320 | 045 | 50·9 N 6·31 W | Start |
| 13x | | | | | |
| 13:58:35 | 2·4 | 320 | 045 | | End |
| 13:59:25 | 2·5 | | 075 | | Start |
| | | | | | Clear above more sc |
| | | | | | to S thru N. |
| 14:01 | 2·5 | | 10 | | End |
| 14:02: | 2·6 | | 105 | | Start |
| 14:04:02 | 2·6 | | | | End |
| 14:04:58 | 2·7 | | 135 | | start |
| 14:06 | 2·7 | | | | End |
| 14:07:32 | 2·8 | | 165 | | Traffic ob - 1900 ft |
| | | | | | not trailing |
| | | | | | We trailing |
| 14:09:32 | 2·8 | | | | Traffic ob + 6000 ft trailing |
| | | | | | more persistently |
| 14:10:26 | 2·9 | | 195 | | Start |
| 14:12:24 | 2·9 | | | | End |
| 14:13:07 | 2·10 | | 225 | | Some Ci above rolling |
| | | | | | above |
| | | | | | |

# Aircraft Scientist's Log

N Pilot

Flight No B...152..... Date .....17/12/5..... Page ..5.... of .....6.....

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| GMT | Run / Profile | Height | Hdg | GPS Position | Remarks (clouds, weather, visibility, winds, sea state etc.) |
|---|---|---|---|---|---|
| | | | | | Traffic at FL060 training |
| 14:15:06 | 2/0 | | | | EW |
| 14:15:52 | 2.11 | | 255 | | Start |
| 14:17:12 | 2.11 | | 255 | | End |
| 14:18:32 | 2.12 | | 282 | | Start |
| 14:20:37 | 2.12 | | | | End power off and stopped trailing |
| | | | | | Slow inc in power |
| 14:21:22 | | | | | Just started. 370 kg/engine |
| 14:29:00 | 3.1 | 260 | 30 | | Start of 10Hz run. |
| | | | | | Clear above, some Ci ahead |
| | | | | | NA training, settings |
| | | | | | 81.8 / 640 / 84.3 / 4.3 |
| 14:37:42 | | | | | Might be coming under some |
| | | | | | thin Ci |
| 14:39: | 3.1 | 260 | | | End of run down sun |
| 14:43:00 | 3.2 | 260 | 212 | | Start of run into sun |
| 14:48 | | | | | Clear above, pass a bit of |
| | | | | | thin Ci ahead. |
| 14:50 | | | | | Thin Ci ahead and to Left |
| | | | | | QUH 1013 |
| 14:52 | 3.2 | | | | End of, still cirrus clear |
| | | | | | above |
| | | | | | |
| | | | | | |

Pg 1 of 8

# Aircraft Scientist's Log

Flight No B...157..... Date ...17/12/5..... Page 6 of 6



| GMT | Run / Profile | Height | Hdg | GPS Position | Remarks (clouds, weather, visibility, winds, sea state etc.) |
|---|---|---|---|---|---|
| 14:54 | | | | | Positioning N and inc. |
| | | | | | speed for 60° orbits |
| 14:57 | | | | | Thin Ci to left |
| | | | | | |
| 14:57:20 | 03 | | | | |
| | | | 150 | | as possible to hold 60° |
| | | | | | |
| | 04 | 260 | 150 | | 50° bank left |
| | | | | | Clear above |
| | 04 | | | | End |
| | 05 | 260 | | | 50° bank left |
| | | | | | thin Ci to S. |
| | 05 | 260 | | | end |
| 15:06 | | | | | Still thin Ci to S |
| | 06 | 260 | 060 | | 50° Right orbit |
| 15:06 | 06 | | | | end |
| | | | | | Still thin Ci. |
| 15:07 | 07 | 260 | 120 | | 50° bank to right |
| | | | | | Sun is coming through |
| | | | | | Ci |
| 15:08 | 07 | | | | Complete. |
| | | | | | |
| 15:15 | | | | | End of Science. |
| | | | | | |
| | | | | | |

# FAAM Dropsonde Flight Log

| Flight No. | B152 | Date | 17/12/2005 |
|---|---|---|---|
| Page No. | 1 of 1 | Operator | PAPJ |

| **GMT** | **Sonde No.** | **Event** | **Comments** |
|---|---|---|---|
| | | *e.g. launch, splashdown* | *e.g. wind data? PTH data? Lat/Long*<br>*NB strings of dropsonde data contain:*<br>*time, pressure hPa, T deg C, RH %, wind direction deg, wind speed m/s, longitude, latitude, height m* |
| 125533 | 01 | launch | 125533.0 274.40 -52.60 98.83 338.70 43.90 -18.60 -1.84560 51.06540 9756.00 |
| | 01 | | Good drop |
| 130655 | 01 | landing | 130655.8 1015.74 4.32 48.88 339.29 5.74 -11.01 -1.74584 50.88241 |
| | | | |
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# CLOUD PHYSICS LOG Flight B152

| Date:17/12/05 | Operator: MAP | DRS Time: 11:54:00 | DAU1 Time:+0 | DAU2 Time: +0 | DAU3 Time: +0 | Aux1 Time: +0 | Aux2 Time: +0 | Page 1 of 3 |
|---|---|---|---|---|---|---|---|---|

| G.M.T | PCASP | | FFSSP | SID1 | SID2 | 2D2-C | | 2D2-P | | CIP25 | | | CIP100 | | | Habit | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Conc/cc | Mean R | Block TX | Count | Count | Conc/L | Max size | Conc/m3 | Max size | Conc m3 | Max size | LWC | Conc m3 | Max size | LWC | | |
| 11:12:24 | 150 | 0.08 | 0 | 10 | 10 | | | | | | | | | | | | Start profile 1 from 2000’ |
| 11:13:41 | 65 | 0.08 | | 10 | 8 | | | | | | | | | | | | FL030 |
| 11:14:33 | 55 | 0.08 | | 10 | 5 | | | | | | | | | | | | FL040 |
| 11:15:34 | 70 | 0.09 | | 5 | 1 | | | | | | | | | | | | FL050 |
| 11:16:25 | 20 | 0.09 | | 2 | 1 | | | | | | | | | | | | FL060 |
| 11:17:24 | 7 | 0.08 | | 1 | | | | | | | | | | | | | FL070 |
| 11:18:06 | 15 | 0.08 | | 1 | | | | | | | | | | | | | FL080 |
| 11:18:54 | 10 | 0.07 | | | | | | | | | | | | | | | FL090 |
| 11:19:48 | 12 | 0.08 | | | | | | | | | | | | | | | FL100 |
| 11:20:42 | 1 | 0.05 | | | | | | | | | | | | | | | FL110 |
| 11:21:36 | 1 | 0.05 | | | | | | | | | | | | | | | FL120 |
| 11:22:31 | 1 | 0.05 | | | | | | | | | | | | | | | FL130 |
| 11:23:32 | 1 | 0.06 | | | | | | | | | | | | | | | FL140 |
| 11:24:09 | | | | | | | | | | | | | | | | | FL150 |
| 11:24:48 | | | | | | | | | | | | | | | | | FL160 |
| 11:25:41 | 1 | 0.05 | | | | | | | | | | | | | | | FL170 |
| 11:26:42 | 1 | 0.06 | | | | | | | | | | | | | | | FL180 |
| 11:38:48 | 1 | 0.06 | | | | | | | | | | | | | | | FL190 |
| 11:39:51 | | | | | | | | | | | | | | | | | FL200 |
| 11:40:58 | 2 | 0.06 | | | | | | | | | | | | | | | FL210 |
| 11:42:03 | | | | | | | | | | | | | | | | | FL220 |
| 11:43:07 | 1 | 0.06 | | | | | | | | | | | | | | | FL230 |
| 11:44:24 | 2 | 0.06 | | | | | | | | | | | | | | | FL240 |
| 11:45:42 | | | | | | | | | | | | | | | | | FL250 |
| 11:47:06 | | | | | Noise | | | | | | | | | | | | FL260 |
| 11:48:26 | Noise | | | | Noise | Noise | | | | | | | | | | | FL270 SID2 File 10 to Uni |
| 11:49:49 | Noise | | | | Noise | | | Noise | | | | | | | | | FL280 Rearm 2 1 |
| 11:57:35 | Noise | | | | | | | Noise | | | | | | | | | FL290 |
| 11:59:32 | Noise | | | | | Noise | | Noise | | | | | | | | | FL300 |
| 12:02:09 | Noise | | | | | Noise | | Noise | | | | | | | | | FL310 |
| 12:06:15 | Noise | | | | | Noise | | Noise | | | | | | | | | End of Profile 1 @ FL320 |
| 12:12:29 | | | | | | | | | | | | | | | | | Start Run 1.1 @ FL320 |
| 12:13:00 | Noise | | | | | Noise | | Noise | | | | | | | | | |
| 12:15:00 | Noise | | | | | Noise | | Noise | | | | | | | | | Rearm 1 1 |
| 12:17:00 | Noise | | | | 1 | Noise | | Noise | | | | | | | | | |
| 12:19:00 | Noise | | | | 5 | Noise | | Noise | | | | | | | | | |
| 12:21:00 | Noise | | | | 1 | Noise | | Noise | | | | | | | | | |
| 12:23:00 | Noise | | | | | Noise | | Noise | | | | | | | | | |
| 12:25:00 | Noise | | | | | Noise | | Noise | | | | | | | | | |
| 12:27:00 | Noise | | | | | Noise | | Noise | | | | | | | | | |
| 12:29:00 | Noise | | | | Noise | Noise | | Noise | | | | | | | | | |
| 12:31:00 | Noise | | | | Noise | Noise | | Noise | | | | | | | | | |
| 12:33:00 | Noise | | | | Noise | Noise | | Noise | | | | | | | | | |
| 12:35:00 | Noise | | | | Noise | Noise | | Noise | | | | | | | | | |
| 12:36:28 | | | | | | | | | | | | | | | | | End of Run 1.1 |
| 12:40:50 | | | | | | | | | | | | | | | | | Start Run 1.2 @ FL320 |

# CLOUD PHYSICS LOG Flight B152

| Date:17/12/05 | Operator: MAP | DRS Time: 11:54:00 | DAU1 Time:+0 | DAU2 Time: +0 | DAU3 Time: +0 | Aux1 Time: +0 | Aux2 Time: +0 | Page 2 of 3 |
|---|---|---|---|---|---|---|---|---|

| G.M.T | PCASP | | FFSSP | SID1 | SID2 | 2D2-C | | 2D2-P | | CIP25 | | | CIP100 | | | Habit | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Conc/cc | Mean R | Block TX | Count | Count | Conc/L | Max size | Conc/m3 | Max size | Conc m3 | Max size | LWC | Conc m3 | Max size | LWC | | |
| 12:41:00 | Noise | | 0 | | Noise | Noise | | Noise | | | | | | | | | |
| 12:43:00 | Noise | | | | Noise | | | Noise | | | | | | | | | |
| 12:45:00 | Noise | | | | Noise | | | Noise | | | | | | | | | |
| 12:47:00 | Noise | | | | | | | Noise | | | | | | | | | |
| 12:49:00 | Noise | | | | | | | Noise | | | | | | | | | |
| 12:51:00 | Noise | | | | | | | Noise | | | | | | | | | |
| 12:53:00 | Noise | | | | | | | Noise | | | | | | | | | |
| 12:55:00 | Noise | | | | | | | Noise | | | | | | | | | |
| 12:57:00 | Noise | | | | | | | Noise | | | | | | | | | |
| 12:58:22 | | | | | | | | | | | | | | | | | End of Run 1.2 |
| 13:07:25 | | | | | | | | | | | | | | | | | Start Run 1.3 @ FL320 |
| 13:08:00 | Noise | | | | | | | Noise | | | | | | | | | |
| 13:10:00 | Noise | | | | | | | Noise | | | | | | | | | |
| 13:12:00 | Noise | | | | | Noise | | Noise | | | | | | | | | |
| 13:13:29 | | | | | | | | | | | | | | | | | End of Run 1.3 |
| 13:13:45 | | | | | | | | | | | | | | | | | Start Orbits |
| 13:20:42 | | | | | | | | | | | | | | | | | End of Orbits |
| 13:48:40 | | | | | | | | | | | | | | | | | Start Run 2.1 @ FL320 |
| 13:49:00 | Noise | | | | Noise | | | Noise | | | | | | | | | |
| 13:50:12 | | | | | | | | | | | | | | | | | End of Run 2.1 |
| 13:50:55 | | | | | | | | | | | | | | | | | Start Run 2.2 @ FL320 |
| 13:51:00 | Noise | | | | Noise | | | Noise | | | | | | | | | |
| 13:52:59 | | | | | | | | | | | | | | | | | End of Run 2.2 |
| 13:53:47 | | | | | | | | | | | | | | | | | Start Run 2.3 @ FL320 |
| 13:54:00 | Noise | | | | Noise | | | Noise | | | | | | | | | |
| 13:55:51 | | | | | | | | | | | | | | | | | End of Run 2.3 |
| 13:56:34 | | | | | | | | | | | | | | | | | Start Run 2.4 @ FL320 |
| 13:57:00 | Noise | | | | | | | Noise | | | | | | | | | |
| 13:58:33 | | | | | | | | | | | | | | | | | End of Run 2.4 |
| 13:59:24 | | | | | | | | | | | | | | | | | Start Run 2.5 @ FL320 |
| 14:00:00 | Noise | | | | Noise | | | Noise | | | | | | | | | |
| 14:01:22 | | | | | | | | | | | | | | | | | End of Run 2.5 |
| 14:02:05 | | | | | | | | | | | | | | | | | Start Run 2.6 @ FL320 |
| 14:03:00 | Noise | | | | | | | Noise | | | | | | | | | |
| 14:04:05 | | | | | | | | | | | | | | | | | End of Run 2.6 |
| 14:04:52 | | | | | | | | | | | | | | | | | Start Run 2.7 @ FL320 |
| 14:05:00 | Noise | | | | Noise | | | Noise | | | | | | | | | |
| 14:06:52 | | | | | | | | | | | | | | | | | End of Run 2.7 |
| 14:07:37 | | | | | | | | | | | | | | | | | Start Run 2.8 @ FL320 |
| 14:08:00 | Noise | | | | Noise | | | Noise | | | | | | | | | |
| 14:09:33 | | | | | | | | | | | | | | | | | End of Run 2.8 |
| 14:10:26 | | | | | | | | | | | | | | | | | Start Run 2.9 @ FL320 |
| 14:11:00 | Noise | | | | Noise | | | Noise | | | | | | | | | |
| 14:12:24 | | | | | | | | | | | | | | | | | End of Run 2.9 |
| 14:13:06 | | | | | | | | | | | | | | | | | Start Run 2.10 @ FL320 |
| 14:14:00 | Noise | | | | Noise | | | Noise | | | | | | | | | |

# CLOUD PHYSICS LOG Flight B152

| Date:17/12/05 | Operator: MAP | DRS Time: 11:54:00 | DAU1 Time:+0 | DAU2 Time: +0 | DAU3 Time: +0 | Aux1 Time: +0 | Aux2 Time: +0 | Page 3 of 3 |
|---|---|---|---|---|---|---|---|---|

| G.M.T | PCASP | | FFSSP | SID1 | SID2 | 2D2-C | | 2D2-P | | CIP25 | | | CIP100 | | | Habit | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Conc/cc | Mean R | Block TX | Count | Count | Conc/L | Max size | Conc/m3 | Max size | Conc m3 | Max size | LWC | Conc m3 | Max size | LWC | | |
| 14:15:08 | | | 0 | | | | | | | | | | | | | | End of Run 2.10 |
| 14:15:54 | | | | | | | | | | | | | | | | | Start Run 2.11 @ FL320 |
| 14:16:00 | Noise | | | | Noise | | | Noise | | | | | | | | | |
| 14:17:52 | | | | | | | | | | | | | | | | | End of Run 2.11 |
| 14:18:33 | | | | | | | | | | | | | | | | | Start Run 2.12 @ FL320 |
| 14:19:00 | Noise | | | | | | | Noise | | | | | | | | | |
| 14:20:38 | | | | | | | | | | | | | | | | | End of Run 2.12 |
| 14:29:00 | Noise | | | | Noise | | | Noise | | | | | | | | | Start Run 3.1 @ FL260 |
| 14:31:00 | Noise | | | | Noise | | | Noise | | | | | | | | | |
| 14:33:00 | Noise | | | | Noise | | | Noise | | | | | | | | | |
| 14:35:00 | Noise | | | | | | | Noise | | | | | | | | | |
| 14:37:00 | Noise | | | | | | | Noise | | | | | | | | | |
| 14:39:02 | | | | | | | | | | | | | | | | | End of Run 3.1 |
| 14:43:00 | 1 | 0.06 | | | | | | Noise | | | | | | | | | Start Run 3.2 @ FL260 |
| 14:45:00 | 2 | 0.06 | | | Noise | | | Noise | | | | | | | | | |
| 14:47:00 | 1 | 0.06 | | | Noise | | | Noise | | | | | | | | | |
| 14:49:00 | 5 | 0.06 | | | Noise | | | Noise | | | | | | | | | |
| 14:51:00 | 1 | 0.06 | | | Noise | | | Noise | | | | | | | | | |
| 14:52:58 | | | | | | | | | | | | | | | | | End of Run 3.2 |
| 14:57:24 | | | | | | | | | | | | | | | | | Start Orbits |
| 15:08:49 | | | | | | | | | | | | | | | | | End of Orbits |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | PCASP noisy at high altitudes<br>PCASP Flowrate = 1CC/sec<br>SID2 Noisy at times<br>2D2-C Noisy at high altitudes<br>2D2-P Noisy at high altitudes | | | | | | | | | | | | | | | | |

| Microwave Radiometers FLIGHT LOG | Date | 17/11/05 | Flight | B152 | log pages | 2 |
|---|---|---|---|---|---|---|

| Operator(s) | Pollard | Campaign | CAESAR |
|---|---|---|---|
| Departure | EXT | Arrival | EXT |

## System start

## MARSS

| | | | | | | |
|---|---|---|---|---|---|---|
| Visual pod inspection | | | | | | X |
| Close 3 SSP circuit breakers | | | | | | X |
| Close all MARSS circuit breakers | | | | | | X |
| FERA on | | | | at time | 09:06:38 | |
| Temperature controller initial temps | Ch16 | 54°C | Ch 17 | 58°C | Ch18 -20 | 40°C |
| Temperature controller set points | | 7.2°C | | 7.2°C | | 7.2°C |
| MARSS CPU on | | | | at time | 09:09:09 | |
| Initial target temperatures | Hot | 277.9 | | Cold | 277.9 | |
| Target heating | | | | | | X |
| *** CHECK SCAN HEAD CLEAR *** | | | | | | X |
| Scanning on (LMD box) | | | | at time | 09:10:55 | |
| Scan indication | | Monitor | › | | Visual | X |

## Deimos

| | | | | | |
|---|---|---|---|---|---|
| Close all Deimos circuit breakers | | | | | X |
| Turn on Deimos CPU | | | | | X |
| *** CHECK SCAN HEAD CLEAR *** | | | | | X |
| Start Deimos Software | | | | at time | 09:13:44 |
| Initial target temperatures | Hot | 277.4 | Cold | 277.4 | |
| Target heating | | | | | X |
| Scan indication | | Monitor | › | Visual | X |
| Weather | Cloud | 7/8 Cu/SC | Precip | No | |
| | Surface | 5.32 | Pressure | 1020 | |
| | Other | | | | |

## System functionality check

(after initial system warmup, approx 1 hour)

| | | | | | | |
|---|---|---|---|---|---|---|
| PC to DRS Time error | | $t_{PC}=t_{DRS}$ + | | at time | | |
| Brightness temps 'sensible' | | | | | | X |
| Target temps | MARSS: | Hot | 344.51 | Cold | 280.9 | |
| | Deimos: | Hot | 344.83 | Cold | 289.06 | |

| Channel gains 'sensible' | Ch1 A ( - ) | Ch3 A ( - ) | Ch1 B ( - ) | Ch3 B ( - ) | |
|---|---|---|---|---|---|
| | 1 | 1 | 1 | 1 | |
| | Ch16 (40-44) | Ch17 (45-49) | Ch18 (40-44) | Ch19 (40-44) | Ch20 (44-48) |
| | 22.09 | 35.29 | 36.22 | 37.33 | 40.67 |

## Power changeover

| | | |
|---|---|---|
| Headset on before start | | |
| Listen to engine start sequence | 4, 3, 2, 1. | |
| LMD off (3 switches, bottom to top) | | |
| Exit Deimos Software (x) | | |
| POWER CHANGEOVER | | |
| LMD on (3 switches, top to bottom) | then pushbutton | |
| Restart Deimos Software | | |
| System running again | at time | |
| | | |

| Flight # | B152 | Date | 17/12/05 | Operator(s) | Pollard | log page | 2 | of | 2 |
|---|---|---|---|---|---|---|---|---|---|

| *Time* | **Run id** | **Alt/FL** | *Remarks* | **Sys** |
|---|---|---|---|---|
| **15:19:02** | | | Marss and deimos off | |
| | | | MARSS operating unattended today, see Scientist 2 log for details | |
| | | | | |
| | | | | |
| | | |

# SWS FLIGHT LOG SHEET

| Flight # | B152 | Date | 17/12/05 | Operator(s) | Ian Rule | log page | | of | |
|---|---|---|---|---|---|---|---|---|---|

| Time | Run id | Alt/FL | Mirr Pos | Int Times | | Remarks |
|---|---|---|---|---|---|---|
| | | | | Vis | NIR | |
| 0920 | | | Zen | 200 | 500 | SWS on checked ok, box temp = 10 |
| 110613 | | | 90R | 200 | 500 | T/o Exeter, dark cal made |
| 111220 | P1 | 2000’ | Zen +6 F | 200 | 500 | Start run, SWS operating ok |
| 111808 | P1 | | “ | “ | “ | Start tape recording count = 0:00:00 |
| 112652 | P1 | FL180 | “ | “ | “ | Interrupt |
| 113735 | P1 | FL180 | “ | 500 | 1000 | Restart, clear above |
| 114950 | P1 | FL280 | “ | “ | “ | Interrupt, poss some thin Ci above |
| 115516 | “ | “ | “ | “ | “ | Restart. Some stray light evident in SWS tube during turn before restart of run. |
| 1202 | “ | FL310 | “ | “ | “ | Some Ci showing on camera |
| 120615 | P1 | FL320 | “ | “ | “ | End profile, dark cal in turn |
| 121231 | R1.1 | FL320 | “ | “ | “ | Start run, thin Ci above, box temp = 13 |
| 123630 | R1.1 | FL320 | “ | “ | “ | End run, dark cal in turn |
| 124052 | R1.2 | FL320 | “ | “ | “ | Start run, box temp = 12, thin ci above |
| 124209 | | | | | | Interrupt run |
| 124225 | R1.3 | “ | “ | “ | “ | Restart, box temp = 12 thin ci above |
| 125825 | R1.3 | “ | “ | “ | “ | End run, followed by dark cal |
| 130744 | R1.4 | FL320 | “ | “ | “ | Start run |
| 1313 | | | | | | End run |
| 131400 | O1 | “ | “ | “ | “ | Start orbit, 30 deg RHD |
| 131718 | O1 | “ | “ | “ | “ | End orbit |
| 131722 | O2 | “ | “ | “ | “ | Start orbit |
| 132044 | O2 | “ | “ | “ | “ | End orbit, dark cal at end, box temp = 14 |
| 1324 | | “ | “ | “ | “ | Thin ci above, temp = 14 |
| 1342 | | “ | “ | “ | “ | Prob clear above, box temp = 14, dark cal |
| 134826 | R2.1 | FL320 | Zen+6F | 500 | 1000 | Start run dodecagon, sample period 1s |
| 135012 | | | | | | End run |
| 135056 | R2.2 | “ | “ | 500 | 500 | Start run, sample period 500ms |
| 135301 | | | | | | End run, box temp 14 |
| 135349 | R2.3 | “ | “ | “ | “ | Start run |
| 135553 | | | | | | End run |
| 135624 | R2.4 | “ | “ | “ | “ | Start run |
| 135835 | | “ | “ | “ | “ | End run, box temp = 14 |
| 135925 | R2.5 | “ | “ | “ | “ | Start run |
| 140124 | | | | | | End run |
| 140206 | R2.6 | “ | “ | “ | “ | Start run, box temp = 13 |
| 140407 | | | | | | End run |
| 140454 | R2.7 | “ | “ | “ | “ | Start run |
| 140654 | | | | | | End run |
| 140736 | R2.8 | “ | “ | “ | “ | Start run |
| 140936 | | | | | | End run |
| 141025 | R2.9 | “ | “ | “ | “ | Start run |
| 141225 | | | | | | End run |

# SWS FLIGHT LOG SHEET

| Flight # | B152 | Date | 17/12/05 | Operator(s) | Ian Rule | log page | | of | |
|---|---|---|---|---|---|---|---|---|---|

| Time | Run id | Alt/FL | Mirr Pos | Int Times | | Remarks |
|---|---|---|---|---|---|---|
| | | | | Vis | NIR | |
| 141308 | R2.10 | FL320 | Zen+6F | 500 | 500 | Start run, box temp = 13 |
| 141508 | | | | | | End run |
| 141552 | R2.11 | " | " | " | " | Start run |
| 141753 | | | | | | End run |
| 141835 | R2.12 | " | " | " | " | Start run |
| 142035 | | | | | | End run |
| 142100 | | | | | | End tape count = 3:02:12 |
| 142240 | | | | | | Start tape count = 0:00:00 |
| | | | | | | |
| 142900 | R3.1 | FL260 | Varied, start with 40F | 150 | 500 | Start 10 min multi view run as per MDG brief. Views changed on whole mins and half mins, max movement time 5 s |
| 143900 | R3.1 | FL260 | Finish on 50A | 150 | 500 | Dark cal at end |
| 144300 | R3.2 | FL260 | Varied, start with 40F | 150 | 500 | Start second 10 min multi view run as per MDG brief. Views changed on whole mins and half mins, max movement time 5 s |
| 145300 | | | | | | End run, dark cal |
| 1457 | O3 | FL260 | Zen+6F | 150 | 200 | Start orbit, 60 deg LHD , box temp = 12 |
| | | | | | | End orbit, aborted unable to hold angle |
| 145858 | O4 | " | " | " | " | Start orbit 50 deg LHD, box temp = 11 |
| 150030 | | | | | | End orbit |
| 150143 | O5 | " | " | " | " | Start orbit 50 deg LHD |
| 150307 | | | | | | End orbit |
| 150443 | O6 | " | " | " | " | Start orbit 55deg RHD, box temp = 10 |
| 150607 | | | | | | End orbit |
| 150702 | O7 | " | " | " | " | Start orbit 55 deg RHD, box temp = 11, poss some ci above |
| 150829 | | | | | | End orbit |
| 151306 | | | | " | " | Dark cal, box temp = 12 |
| | | | | | | |
| 151830 | | | | | | Stop second tape, count = 0:55:38 |
| | | | | | | |
| 153953 | | | | | | Land Exeter |
| | | | | | | |
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ZIMNIB

# ARIES flight log

Flight: B152 | Location: EXETER | page 1 of

Date: 17/12/05 | Operator(s): Jass Kent | Resolution: 1cm | Gain A: 1 B: 2

Notes: Still some problems with scan rate dropping

| DRS time | Flight ptrn | Filename | Shtr | HBB | CBB | Mir. | Det. | Win | Macro(s) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 0930 | STARTED FLIGHT RECORDING | | | | | | | | | |
| 045200 | Gnd | B152A | Osd | | | | | | N1 | 1 scan long. Inclined down ~~stronger~~ |
| 045523 | " " | B152B | Osd | 71.2 | 30.9 | | | | N1 | |
| 045849 | " " | B152D | Osd | 71.0 | 31.1 | 13.2 | -190.6 | 23.0 | Z1 | 1 scan long. " " " |
| 045845 | " " | B152E | Osd | 71.1 | 31.1 | | | | CH1 | 1 scan long. |
| 100017 | " " | B152F | Osd | | | | | | CH2 | 100200 CW scan 2 long |
| 100949 | FLIGHT RECORDING STARTED | | | | | | | | | |
| 1056 | Gnd | Set CBB to 10°C from 30°C | | | | | | | | |
| 1113 | CBB temp only dropped to 25°C — | | | | | | | | Set it to 20°C | |
| 111800 | Tilted | setting gain to 4 on ~~Chan~~ Chan B. Saturation high so left it on 2. | | | | | | | | |
| 112600 | scan rate dropping down to 60 s/scan. Set it to 236 s/scan for a scan momentarily | | | | | | | | | |
| 113855 | ~~Boat~~ P1 | B152G | Osd | 70.9 | 22.2 | 3.3 | -189.9 | 21.4 | - scan CW · stopped | to run slow near end of CW. |
| 114015 | P1 | B152H | Osd | | | | | | TEST | |
| | ~~P1~~ | ~~B152I~~ | ~~Open~~ | | | | | | ~~Z1 x 2~~ | |
| | Pixel PC to see if the scan rate slowed down. | | | | | | | | | |
| 113634 | Started recording | | | | | | | | | |
| 115846 | P1 | B152I | Osd | 71.0 | 22.5 | -8°C | -189.9 ~~-204~~ | 20.3 | | |
| | ~~P1~~ | ~~B152J~~ | ~~Open~~ | | | | | | | |
| 120644 | P1 | B152J | Osd | 71.2 | 22.8 | 11.4 | -188.9 | 16.4 | CH2 | CW before run stop |

# ARIES flight log

Flight: B1S2 | Location: Chilbolton | page 2 of

Date: 17/12/05 | Operator(s): JOSS | Resolution: land | Gain A: 2 | B: 2

Notes:

| DRS time | Flight ptrn | Filename | Shtr | HBB | CBB | Mir. | Det. | Win | Macro(s) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 121230 | R1·1 | B1S2K | Open | 69·9 | 22·0 | -23.8 | -189·9 | 12·9 | Z1 x 3 | FLE 320. |
| 121545 | " " | B1S2L | Clsd | 71·1 | 22·5 | - | | | CH2 x 1 | |
| 121816 | " " | B1S2M | Open | 70·6 | 22·2 | -22·3 | -189·9 | | Z1 x 3 | FL320. |
| 122137 | " " | B1S2N | Clsd | 70·7 | 22·6 | -27·0 | -190·6 | | CH2 x 1 | |
| 122452 | " " | B1S2O | open | 70·9 | 21·8 | -26·2 | -189·9 | 11·0°C | Z1 x 3 | ~~At end of run~~ |
| 122719 | " " | B1S2P | Clsd | 71·0 | 22·7 | -26·3 | -190·6 | 8·4°C | CH2 x 1 | |
| 122949 | " " | B1S2Q | Open | 70·5 | 22·0 | -25·5 | -190·6 | 11·3 | Z1 x 3 | Extended run |
| 123304 | " " | B1S2R | Clsd | 70·9 | 22·3 | -25·6 | -190·6 | 14·0 | CH1 x~~1~~ | seeing if quicker cal worked (was because I can. |
| 12 34 ?? | " " | B1S2S | Clsd | 70·8 | 22·6 | -25·2 | -190·6 | 12·9 | N1 x 2 | |
| 123640 | END R1.1 | B1S2T | Clsd | 70·8 | 22·6 | -24·3 | -190·6 | 14°C | CH1 | In turn. |
| 124051 | R1.2 | B1S2U | Open | 66·7 | 22·4 | -26·1 | -190·6 | 7·6·6 | ~~Z1~~ x 3 | FL320. - Some kinking on storm |
| 124411 | R1·3 | B1S2V | Clsd | 71·0 | 22·4 | -26·2 | -190·6 | 10·3 | CH2 | |
| 124630 | R1·3 | B1S2W | open | 70·3 | 22·2 | -26·6 | -190·6 | 13·3 | Z1 x 3 | |
| 124946 | R1·3 | B1S2X | Clsd | 70·8 | 22·5 | -27·6 | -190·6 | 8·0 | CH 2 | |
| 1525?? | ~~R1·3~~ | B1S2Y | Cl/op | 71·7 | 22·1 | -26·5 | -190·6 | 13·1 | Z1 x 3 | Shutter closed on storm |
| 125516 | R1·3 | B1S2Z | close | 71·0 | 23·1 | -27·4 | -190·6 | 11·3 | CH2 | |
| 125933 | R1·3 | B1S2Ø | open | 70·8 | 23·1 | -27·1 | -190·6 | 13·0 | Z1 x 3 | End of run before finished |
| 130043 | ~~R1·4~~ | B1S2 1 | Clsd | 75·7 | 22·5 | | | | CH 2 | |
| 130459 | — | B1S2 2 | Clsd | 71·2 | 22·0 | -26·0 | -190·6 | 16·6 | CH1 | |

# ARIES flight log

Flight: B152 | Location: Chilbolton | page 3 of

Date: 17/12/05 | Operator(s): Joss | Resolution: 1cm | Gain A: 2 B: 2

Notes:

| DRS time | Flight ptrn | Filename | Shtr | HBB | CBB | Mir. | Det. | Win | Macro(s) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 130714 | Rt4 | B1523 | open | ~~68.9~~ 69.0 | 22.4 | -27.4 | -19.9 | . | Z1 x 3 | |
| 131045 | " " | B1524 | Clsd | 71.6 | 22.2 | -27.4 | -190.6 | 8.9 | CH2 | |
| 131353 | Orbit 1 | B1525 | open | 70.3 | 22.8 | -26.9 | -190.6 | 13.9 | Z1 x 2 | |
| 131607 | " " | B1526 | open | 70.4 | 22.3 | -27.4 | -190.6 | 7.4 | Z1 x 2. | |
| 131830 | Orbit 2 | B1527 | Clsd | 70.8 | 22.6 | -27.3 | -190.6 | 7.8 | CH2 | |
| 132518 | — | B1528 | Clsd | 70.2 | 22.4 | -27.9 | -190.6 | 18.7 | ~~CH2~~ CH1 | |
| 132731 | — | B1529 | Clsd | 70.8 | 22.3 | -25.0 | -190.6 | 18.7 | N1 x 3 | |
| 133036 | — | C1521A | Clsd. | 70.7 | 22.3 | -24.8 | -190.6 | 15.6 | CH1. | |
| 133224 | Set CH2 gain to 4 | | | | | | | | | |
| 133732 | Reset gain on CH2 to 2 | | | | | | | | | |
| 1340 | Problems still with scan rate - getting worse | | | | | | | | | |
| | Reset PC - but problem still there. | | | | | | | | | |
| | Left ARIES off for 30 mins. - Restarted - Problem still here though not so bad. | | | | | | | | | |
| 145000 | Straight/level | C1521B | Clsd. | 70.5 | 22.7 | -19.8 | -18.8 | 17.8 | CH2 | |

Flight Manager's Instrument Status Log

Flight No. **B** 152 Date: 17th December 2005

| Instrument | Operated | Instrument | Operated |
|---|---|---|---|
| **Navigation** | | **Cloud Physics** | |
| INU | **Y** | **Probes** | |
| XR5M GPS | **Y** | FFSSP | **Y** |
| Cruciform GPS | **N** | PCASP | **Y** |
| Satcom C | **Y** | 2D-P | **Y** |
| Satcom H | **Y** | 2D-C | Y |
| **Thermometers** | | Cloudscope | **N** |
| De-Iced Temp | **Y** | SID 1 | **Y** |
| Non De-Iced | **Y** | SID 2 | **Y** |
| Heimann | **Y** | HVPS | **N** |
| **Hygrometers** | | CIP25 | **N** |
| G. Eastern | **Y** | CIP100 | **Y** |
| J. Williams | **Y** | | |
| Nevzorov | **Y** | | |
| TWC | **Y** | | |
| FWVS | **Y** | **Racks:** | |
| **Radiometers** | | INC | **N** |
| Upper Clear | **Y** | CCN / CPC | **N** |
| " Red | **Y** | CVI | **N** |
| " Silicon | **Y** | | |
| " JN02 | **Y** | **Aerosol** | |
| Lower Clear | Y | PSAP | **N** |
| " Red | **Y** | Nephelometer | **N** |
| " Silicon | **Y** | Filters | **N** |
| " JN02 | **Y** | AMS | **N** |
| **Large Radiometers** | | | |
| TAFTS | **Y** | | |
| MARSS | **Y** | | |
| DEIMOS | **Y** | **Others:** | |
| ARIES | **Y** | NIR TDLAS | N |
| SWS | Y | 2BT O3 | N |
| **Chemistry** | | VACC | N |
| Ozone | Y | PEROXIDE | N |
| SO2 | Y | Formaldehyde | N |
| NOX | Y | ADA | N |
| CO | Y | CPI | Y |
| ORAC | N | NOxy | N |
| PAN | N | PTRMS | N |
| PERCA | N | Bag Sampling | N |
| WAS | N | Tube Sampling | N |

# Faults / Incidents Log

**Flight No.** B152
**Date:** 17th December 2005

## Instruments

1. SID 1 – working
2. PCASP – noisy at times
3. 2D-P noisy at high level
4. 2D-C noisy at high level
5. FSSSP ok
6. SID 2 working, some noise
7. Flight Manager's PC – locked up 13:14:00 Rebooted, then okay.
8. TAFTS working
9. ARIES working – scan problem
10. SWS working ok
11. MARSS ok, no channel 16
12. CPI working
13. JW zero pot is set to nearly full scale (fully clock), zero now stuck off scale (-ve)
14. CO signal noisy, reported by Joss & Paul

## Aircraft

Nil

Satcom H Calls

Nil

**MISSING LOG SHEETS:**

The following log sheets are not available for flight B152:

| Log | Reason |
|---|---|
| Cloud Physics Processing | |
| Core Chemistry | pre flight only, unmanned operation on auto calibrate so no In Flight log |
| CPI | Log only of interest to instrument operator so no copy left with FAAM |
| TAFTS | No log is ever taken for TAFTS |
| | |
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| | |

**VIDEO RECORDINGS:**

4 x ????ward Facing Cameras
4 x ????ward Facing Cameras

Digital8 video recordings from this flight reside with :

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